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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shing-Kuo Pan

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MORRISON & FOERSTER LLP  
1650 TYSONS BOULEVARD  
SUITE 300  
MCLEAN, VA 22102

EXAMINER

KINKFAD, ARNOLD M

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/932,977

Applicant(s)

PAN ET AL.

Examiner

Arnold M Kinkead

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-38 is/are allowed.
- 6) ☒ Claim(s) 1-27, 29 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 28, 30 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 06 August 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 08-06-03.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

*Drawings*

1. The drawings were received on 08-06-03. The drawing is approved.

*Specification*

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter.

See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no antecedent basis for " spectral continuum of random noise" , and " spectral bands" .

*Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the independent claims 1 and 9, the added recitation for " random noise" is not supported by the original disclosure. What exactly does applicant mean by " RANDOM noise" .

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following lacks proper antecedent basis:

In claim 1, line 3, " said noise" ; see also, claim 2, line 1, claim 3, line 1, claim 4, line 1, and claim 5, line 1.

*Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 9, and 17 (as best understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Logan et al (US 4,521,861).

The reference by Logan et al discloses a millimeter and submillimeter wave noise generating system with noise means (110) for generating random noise (see figure 6, col. 8, lines 3-16). On lines 63-col. 9, lines 10, the system is described as having a mixer (multiplier, 120, upconversion means for outputting a second noise band), microwave amplifiers (for amplifying the first noise band of the diode output), and band pass filters (118, 126). Note the millimeter and submillimeter range covers (100 MHz (1 tenth of 1 GHz) - > 1.2 THz infrared region). Please note that the examiner is relying on the information provided in col. 8 of the reference to cover the ranges as recited by applicants. The method steps being inherent.

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*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
8. This application currently names joint inventors. In considering patentability of the claims under 35

U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 5 and 10-13, 14-16, 18-27, 29 and 32-34 (as best understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan et al (US 4,521,861) and further in view of Tipton (US 4,742,561).

The reference by Logan et al discloses a millimeter and sub-millimeter wave noise generating system with noise means (110) for generating random noise (see figure 6, col. 8, lines 3-16). On lines 63-col. 9, lines 10, the system is described as having a mixer (multiplier, 120, upconversion means for outputting a second noise band), microwave amplifiers (for amplifying the first noise band of the diode output), and band pass filters (118, 126). Note the millimeter and sub-millimeter range covers (100 MHz (1 tenth of 1 GHz)-

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>1.2THz infrared region). Please note that the examiner is relying on the information provided in col. 8 to cover the ranges as recited by applicants. Due to the high frequencies involved, the noise will have inherent noise temperatures greater than 2000degrees K. The method steps being inherent.

The reference by Logan et al. does not describe the specific range of output frequencies for the millimeter and sub-millimeter output, notably, for example, for the first noise band(0.1 to about 60 GHz) and for the second noise band(60 GHz-1Thz). The use of harmonic mixers are not disclosed for converting a first noise band to a second noise band.

With regards to the specific noise bands, the reference does suggest that millimeter and sub-millimeter (infrared) frequencies are part of the frequency of operation for the radiometer, and thus the noise spectrum of interest for the first and second noise bands would be well within the operational limits described above in the reference. The diode would be chosen to output a wideband spectrum of random noise within a first band and the mixer generating the second band of interest. The system is used in tactical(see col. 2, lines 19-23) operations that would include means for moving and following targets(characterizing/identifying), thus portable.

Also, the harmonic mixers(such as diode mixers) are not disclosed however these are conventional frequency scaling devices that are implemented in high frequency generators to scale a particular band of frequency up or down as desired to a second band of operation before output. Official notice is taken with regards to this scaling.

Lastly, the use of attenuating means for the first(microwave) noise band is shown by Tipton, see figure 4, whereby microwave amplifiers(112,114,118), receiving a noise band output is followed by a level

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set attenuator(116) to allow for proper level control and thus load sensitivity problems will be avoided, i.e., any load requiring a certain power level will be able to receive the attenuated signal.

In light of the above it would have been obvious for one of ordinary skill in the art to have recognized that the high frequency generator of Logan et al could be modified to include a harmonic mixer so as to scale the output spectrum in any direction up/or down as desired to achieve a second band sent to the antenna, this allows for a desired scaled frequency control. Choosing a particular band of operation(for the first and second bands) is part of the design criteria for building such a radiometer to allow for proper target characterization and finally, the use of an attenuator after amplification is shown by Tipton for providing the appropriate load sensitivity levels and thus safe operation of the system at these extremely high frequency levels.

*Allowable Subject Matter*

10. Claims 30 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Please note the examiner will address the allowableness of claims 7 and 8 once the 112, first rejection is resolved.

Claims 35-38 are allowable over the prior art of record. The examiner could not find fair suggestion for the noise generator with noise temperature greater than 2000Kelvin comprising one or more frequency bands between 110GHz-1.2THz.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M Kinkead whose telephone number is 703-305-3486. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 703-308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Arnold M Kinkead  
Primary Examiner  
Art Unit 2817

Arnold Kinkead  
October 31, 2003